

# The Role of the Science Fair in Education\*

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While the science fair is a relatively new co-curricular activity, the idea is a very old one. Throughout the history of human society, fairs and exhibits of various kinds have stimulated interest in ideas, processes, and commodities and thus have been major forces in world progress. The science fair today is merely this old idea, developed especially as an educational tool to create interest in science and engineering. There can be little doubt that, along with the phenomenal growth of the science fair movement, interest in science has increased among school administrators, students, and parents.

The development of projects has proved to be an effective means of extending science beyond the classroom. Since this is true for the average student as well as for the more academically able student, a project may take any of many forms and deal with any of many subjects. The best project is not necessarily the most complex nor the most expensive; it is rather the project which best shows ability of the student to solve a problem whether it be large or small. The quality of exhibits displayed at regional, state, or national fairs is remarkable, and the investigations and interpreparations that are being made by high school students continues to amaze both the judges and the general public. It must be remembered, however, that learning occurs during the development of every project and many of these

never get beyond the school fair. For this reason, the school fair is the most important one in the chain of the school, regional, state, and national fairs. These larger fairs, however, are very important as incentives to the student and in stimulating public interest, and should be supported to the fullest extent. These larger fairs serve the same purposes as do the bowl games or the world series—namely, to stimulate interest and motivate effort at the local level.

Rewards are many for each student who plans a project and carries out the investigations to solve the problem. During the process he has gained educational experiences that are of lasting importance: he has gained information about a given subject, he has learned how to identify problems and undertake investigations toward the solution, he has learned and developed an understanding of the basic principles of research, he has acquired an appreciation of the implications of science, he has learned to use material resources, he has become acquainted with scientists and their work, he has had experience in communicating his ideas to others, he has developed self-confidence, and, by developing critical thinking, he is in a better position to evaluate himself for determining the course of study or career he should choose. Many of these junior scientists are stimulated to become senior scientists of tomorrow; others who find that they should not pursue science as a career will, nevertheless, make up a citizenry which will be appreciative of science.

The science fair program, in addition to the basic function of inspiring young

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people to do some creative thinking and to conduct research, offers an opportunity for students to gain recognition for their efforts. Every scientist, whether he be seven or seventy, is encouraged and inspired to further his research if he is aware that his endeavors are being rewarded by recognition. Recognition does not mean that large sums of money must be spent on prizes. In fact, large cash or material prizes, if allowed to become the primary emphasis in a science fair program, would cause the fair to lose its worth as an educational experience. The recognition that a high school student wants is an appreciation for his efforts, praise for worthwhile work accomplished, and encouragement and suggestions for advancing his study.

The opportunity to exhibit a project serves as an inducement for its development but the product for exhibition should not be the primary aim. The real value of a project is in the process of developing. The more people with whom a student discusses his project, the more ideas and suggestions for solving his problem will evolve for evaluation. This type of help is valuable and the student should be encouraged to seek it. There are, of course, limits on both the amount and type of outside assistance that a student should accept. If, however, the student, the teacher, the parent, and outsiders offering the assistance keep in mind the purpose of doing a project, this will not become a problem. The student should learn early that it is very important to keep a record of the people he talks with, the references he uses, and accurate data on his trials and errors. All of this information should be recorded and become a part of his exhibit at the time of the fair. Care should be taken to give recognition to any and all persons who have helped in any way.

Many students begin an investigation and fail to progress to a point where they think they want to display their findings because they think their data are not con-

clusive or significant, or perhaps they think that their project is not a winner. Perhaps too much emphasis is being placed on competition with other students and whatever awards may be given rather than personal satisfactions and personal rewards gained. The rewards are there for each student!

When the projects are displayed in a science fair, they are reviewed by a panel of senior scientists. We usually refer to this team as the judges. These men and women should be more than judges. They should be consultants, counselors, and advisors.

Every student who conducts an investigation and enters an exhibit in a fair should have an opportunity to discuss his project with practicing scientists. This is usually done at area fairs, but is sometimes overlooked at the local or school level. I feel that since this does provide an opportunity for counseling, it is most important that every student be granted this opportunity the first time that his project is shown. No investigation is really ever complete and the sooner the student can get the advice of the experts, the greater will be the benefits. Many students never get beyond the school fair because they got started on the wrong track. If these same students, however, are given the proper counseling, they can be encouraged to correct their methods and procedures in future studies, and thus be encouraged to continue their interest in science.

Frequently, fair directors think that having each student interviewed by the judges would make the job of getting enough judges too difficult. This is not actually the case because scientists are much more willing to give their time if they can have the opportunity to discuss the project with the student rather than merely making judgments on the basis of hurriedly examining an exhibit. Only by talking with the student can anyone know how well the exhibitor really understands what he is trying to show and what ques-

tions he needs to have answered in order to continue his study.

In evaluating the role of the science fair in education, one must consider all of the benefits to be received by all who participate. These would include those derived from selecting and defining a suitable problem, carrying out the investigation, use of human and material resources, interpretation of data, preparation of exhibit, procedures of judging, the awards and recognition, and arousing public interest and support. When all of these are considered, the rewards are many for those who choose this way to extend science beyond the classroom.

## T-THOUGHTS

### Standardization

Those who seem impatient with current progress on the so-called problem of "excessive numbers of makes and models in our armamentarium" may find solace in King Charles' dilemma. In June 1631, he published orders on the subject. A transcript of an extract\* is given hereon:

"And because we are credibly given to understand that the often and continuall altering and changing of the fashion of armes and armours, some countrys and parts of the Kingdome having armours of one fashion, and some of another, do put many of our subjects to a great and unnecessary charge, and more than need requireth;—for the avoiding whereof, our

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\* Patent Rolls (Chancery), 7 Charles I, Part 20 (C66/2579).

will and pleasure is, and wee doe hereby appoint and command, that hereafter there shall be but one uniform fashion of armours of the said common and trayned bands throughout our said Kingdome of England and domynion of Wales, when as any of the said armours shall be supplied and new made, and that that form and fashion of armour shall be agreeable to the last and modern fashion lately set downe and appoynted to be used by the lords and others of our Council of Warre (the patterns whereof are now and shall remayn in the office of our ordinance from tyme to tyme, which is our pleasure likewise concerning gunnes, pikes, and bandaliers whereof patterns are and shall remayn from tyme to tyme in our said office)."

### Worry-Bridges

Some people seem to exhibit a propensity about crossing worry-bridges before they come to them. They have the extraordinary talent of hanging black draperies and readying funeral sermons in excited anticipation, only to find out later that there was no problem after all. They remind me of Sancho.

Perhaps you remember Sancho Panza in Cervantes' Don Quixote. The poor fellow found himself clinging desperately one night to a window ledge. He sweated, squirmed, and prayed for dear life all through the night. When day broke, he found that his feet had been only an inch from the ground!

—*Ralph G. H. Siu*

